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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,768	09/22/2000	Yasuo Kobayashi	08038.0043	8178

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EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 04/21/2003 //

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/667,768

Applicant(s)

KOBAYASHI ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 8,9 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7,10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-7 in Paper No. 9 is acknowledged.

Information Disclosure Statement

2. The information disclosure statement filed 01/30/03 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The IDS does not include a copy of any of the "Other Documents" listed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,076,205 to Vowles et al.
5. Vowles et al. disclose a processing apparatus (Figure 1; column 3, rows 43-50) for removing a film from an object to be processed, the processing apparatus comprising: a first processing chamber (22) having an active gas species generating unit; a second processing chamber (24) having a heater for heating the object to be processed; and a transporter/transport arm (34; column 2, rows 41-50) for transporting the object between the first processing chamber and the second processing chamber.

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Although a heater is not explicitly disclosed, it would inherently be a part of a rapid thermal annealing chamber.

6. With respect to claim 5, Vowles et al. further teach that the transporter (transport arm) is arranged in a transfer chamber (16, 18), which is filled up with a non-reactive gas atmosphere (column 2, rows 49-52).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,532,593 to Brors et al. in view of U.S. Patent No. 6,403,925 to Johnsgard et al.

9. Brors et al. disclose a processing apparatus in Figures 3, 11 and 12, comprising: a processing container (22) accommodating an object to be processed therein; an active gas species (abstract); a heater (400) arranged outside the processing container to heat the object to be processed; a transparent window (104) formed in the processing container between the heater and the object to be processed, the transparent window sheltering the interior of the processing container from the outside in an airtight manner and also allowing the heating energy to pass through; and a shielding plate (122) provided in such a way that the shielding plate can be inserted into or extracted from a gap between the object and the transparent window.

10. However, Brors et al. fail to teach the shield as inserted into or extractable from a gap between the object and the transparent window.

11. Johnsgard et al. teach the use of a non-transmissive plate, which is insertable and extractable, for the purpose of covering a window when not in use (column 9, rows 61-67).

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12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an insertable and extractable shield in Brors et al. in order to cover the window when not in use as taught by Johnsgard et al.

13. With respect to claim 12, which is drawn to an intended method of use the apparatus, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

14. Claims 3/1 and 3/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al. and Johnsgard et al. or Vowles et al. as applied above, respectively.

15. Claims 3/1 and 3/2 are drawn to a chemical species for an intended use of the apparatus, the courts have ruled that expressions relating an apparatus to the contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).

16. Claim 4/1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al. and Johnsgard et al. as applied to claim 1 above, and further in view of U.S. Patent No. 5,624,499 to Mizuno et al.

17. Brors et al. and Johnsgard et al. disclose the invention substantially as claimed and as described above.

18. However, the prior art fails to teach a shielding plate provided with a cooler for cooling the shielding plate itself.

19. Mizuno et al. teach cooling a shielding structure within a processing apparatus for the purpose of keeping the structure at a temperature where a film deposition rate is so low that deposition on the shield and the resulting contamination particles are prevented (column 15, rows 54-61).

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20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a cooler for cooling the shielding plate in the prior art in order to prevent unwanted deposition and unwanted deposition particles within the chamber as taught by Mizuno et al.

21. Claims 6/1 and 7/1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al. and Johnsgard et al. as applied to claim 1 above, and further in view of U.S. Patent No. 4,952,273 to Popov and U.S. Patent No. 5,830,310 to Doi.

22. Brors et al. and Johnsgard et al. disclose the invention substantially as claimed and as described above.

23. However, the prior art fails to disclose the apparatus further comprising a plasma generating tube, a plasma gas introducing part, a NF₃ gas supplying part, a microwave generating source or a waveguide.

24. Popov teaches the use of a plasma generating tube (50) for the purpose of controlling the size, shape and density of the plasma stream at the sample and to deliver the plasma to the sample without interfering with adjacent equipment (column 4, rows 52-56); a plasma gas introducing part (58) for the purpose of injecting input gases into the source chamber (column 4, rows 64-66).

25. Doi teaches the use of a processing apparatus further comprising a NF₃ gas supplying part (18) for the purpose of introducing a gas for in-situ cleaning processing (column 5, rows 29-32).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plasma generating tube in the prior art in order to control the size, shape and density of the plasma stream at the sample and to deliver the plasma to the sample without interfering with adjacent equipment as taught by Popov et al. and to additionally provide a plasma introducing part in order to inject the gases in to the source chamber as taught by Popov et al.

27. It would have been further obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a NF₃ gas supplying part in the prior art in order to introduce a gas for in-situ cleaning processing as taught by Doi.

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28. With respect to claim 7/1, Popov teaches the use of a wave magnetron for the purpose of generating microwaves (column 3, rows 44-47) and a waveguide for delivering the microwaves to the chamber (abstract).

29. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a wave magnetron and a waveguide in the prior art in order to generate microwaves and deliver microwaves, respectively, as taught by Popov.

30. Claims 6/2 and 7/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vowles et al. as applied to claim 2 above, and further in view of U.S. Patent No. 4,952,273 to Popov and U.S. Patent No. 5,830,310 to Doi.

31. Vowles et al. disclose the invention substantially as claimed and as described above.

32. However, the prior art fails to disclose the apparatus further comprising a plasma generating tube, a plasma gas introducing part, a NF3 gas supplying part, a microwave generating source or a waveguide.

33. Popov teaches the use of a plasma generating tube (50) for the purpose of controlling the size, shape and density of the plasma stream at the sample and to deliver the plasma to the sample without interfering with adjacent equipment (column 4, rows 52-56); a plasma gas introducing part (58) for the purpose of injecting input gases into the source chamber (column 4, rows 64-66).

34. Doi teaches the use of a processing apparatus further comprising a NF3 gas supplying part (18) for the purpose of introducing a gas for in-situ cleaning processing (column 5, rows 29-32).

35. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plasma generating tube in the prior art in order to control the size, shape and density of the plasma stream at the sample and to deliver the plasma to the sample without interfering with adjacent equipment as taught by Popov et al. and to additionally provide a plasma introducing part in order to inject the gases in to the source chamber as taught by Popov et al.

36. It would have been further obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a NF3 gas supplying part in the prior art in order to introduce a gas for in-situ cleaning processing as taught by Doi.

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37. With respect to claim 7/2, Popov teaches the use of a wave magnetron for the purpose of generating microwaves (column 3, rows 44-47) and a waveguide for delivering the microwaves to the chamber (abstract).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a wave magnetron and a waveguide in the prior art in order to generate microwaves and deliver microwaves, respectively, as taught by Popov.

39. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vowles et al. as applied to claims 2 and 5 above, and further in view of U.S. Patent No. 5,512,320 to Turner et al.

40. Vowles discloses the invention substantially as claimed and as described above.

41. However, Vowles et al. fails to teach the transfer chamber connected to a load-lock chamber or a cooling chamber.

42. Turner et al. disclose a transfer chamber (Figure 1, 12) connected to a load-lock/cooling chambers (14A and 14B) for the purposes of evacuating a plurality of substrates (abstract) and providing continuous and rapid flow of substrate processing while allowing adequate time for cooling of substrates; thus, providing an economic and advantageous way of processing (column 2, row 66 through column 3, rows 4).

43. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a load-lock/cooling chamber in Vowles et al. in order to evacuate a plurality of substrates and provided continuous rapid flow of substrate processing while allowing for cooling of substrates as taught by Turner et al.

44. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vowles et al. as applied to claims 1 and 12 above, and further in view of U.S. Patent No. 5,041,719 to Harris et al. and U.S. Patent No. 4,952,299 to Chrisos et al.

45. The prior art discloses the invention substantially as claimed and as described above.

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46. However, the prior art fails teach the shielding plate connected to a shaft or a driver arranged outside the processing container for driving the shaft.

47. Harris et al. disclose a shield (37) attached to a shaft (41) and a driver (42) outside the processing apparatus for the purpose of manipulating the shield between a position where it is inserted or extracted (column 6, rows 58-66).

48. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a shaft and driver in the prior art in order to insert and extract the shielding plate as taught by Harris et al.

49. The prior art discloses the invention substantially as claimed and as described above.

50. However, the prior art fails to teach a seal for airtight sealing between the shaft and a wall of the processing chamber.

51. Chrisos et al. teach the use of a ferrofluidic seal for sealing a shaft and a wall of a processing chamber for the purpose of maintaining vacuum integrity within the vacuum chamber (abstract).

52. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a seal for sealing the shaft and a wall of the processing chamber in the prior art in order to maintain the vacuum integrity of the vacuum chamber as taught by Chrisos et al.

Response to Arguments

53. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Brors et al. is cited for the configuration of structures, specifically, a window with a shield to obstruct a heater. Johnsgard et al. is cited for teaching making a shield insertable and extractable. Examiner recognizes that Brors et al. fail to teach the shield as insertable and retractable and that Johnsgard et al. fails to teach all of the structures recited in Applicant's claims. This is why the he two references are combined and not used individually.

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54. With respect to Applicant's argument that one of ordinary skill in the art would not be motivated to combine the Brors et al. and Johnsgard et al. based on different intended uses of the shielding structures, Examiner again points out that Johnsgard is relied upon solely for teaching insertion and extraction of a shield for periods of use and non use.

55. In response to applicant's argument that Vowles et al. does not include all of the elements defined by claim 2, specifically, "a first processing chamber which allows an oxide film formed on the surface of an object to react with an active gas species under a condition of low temperature, thereby forming a product film" or "a second processing chamber with a heater for heating an object and allowing the heater to heat the product film formed on the surface of the object to a predetermined temperature for vaporization, thereby removing a product film formed in the first processing chamber", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Vowles et al. disclose a chamber capable of supplying an active gas (plasma) at a low temperature and therefore contains all the structural limitations pertaining to the first processing chamber. With respect to what Vowles et al. teach as an annealing chamber, which Examiner has pointed out is capable of heating. Examiner points to a commonly accepted definition of "annealing" as provided by Merriam-Webster, "to heat and then cool". An "annealing" chamber would inherently have a heater based on this definition.

Conclusion


56. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

57. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

km
April 14, 2003



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